

$I(J^P) = \frac{1}{2}(0^+)$

OMITTED FROM SUMMARY TABLE

Needs confirmation. See the mini-review on scalar mesons under $f_0(500)$ (see the index for the page number).

NODE=M174

K₀^{*}(800) MASS

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
682 ±29 OUR AVERAGE				Error includes scale factor of 2.4. See the ideogram below.
826 ±49	+49 -34	1338	1 ABLIKIM	11B BES2 $J/\psi \rightarrow K_S^0 K_S^0 \pi^+ \pi^-$
849 ±77	+18 -14	1421	2,3 ABLIKIM	10E BES2 $J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$
841 ±30	+81 -73	25k	4,5 ABLIKIM	06C BES2 $J/\psi \rightarrow \bar{K}^*(892)^0 K^+ \pi^-$
658 ±13			6 DESCOTES-G..06	RVUE $\pi K \rightarrow \pi K$
797 ±19	±43	15k	7,8 AITALA	02 E791 $D^+ \rightarrow K^- \pi^+ \pi^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
663 ± 8	±34		9 BUGG	10 RVUE S-matrix pole
706.0 ± 1.8	±22.8	141k	10 BONVICINI	08A CLEO $D^+ \rightarrow K^- \pi^+ \pi^+$
856 ± 17	±13	54k	11 LINK	07B FOCS $D^+ \rightarrow K^- \pi^+ \pi^+$
750 ± 30	±55		12 BUGG	06 RVUE
855 ± 15		0.6k	13 CAWLFIELD	06A CLEO $D^0 \rightarrow K^+ K^- \pi^0$
694 ± 53			3,14 ZHOU	06 RVUE $K p \rightarrow K^- \pi^+ n$
753 ± 52			15 PELAEZ	04A RVUE $K \pi \rightarrow K \pi$
594 ± 79			14 ZHENG	04 RVUE $K^- p \rightarrow K^- \pi^+ n$
722 ± 60			16 BUGG	03 RVUE 11 $K^- p \rightarrow K^- \pi^+ n$
905 ± 65	±30		17 ISHIDA	97B RVUE 11 $K^- p \rightarrow K^- \pi^+ n$

1 The Breit-Wigner parameters from a fit with seven intermediate resonances. The S-matrix pole position is $(764 \pm 63^{+71}_{-54}) - i (306 \pm 149^{+143}_{-85})$ MeV.

NODE=M174M;LINKAGE=LI

2 From a fit including ten additional resonances and energy-independent Breit-Wigner width.

NODE=M174M;LINKAGE=BL

3 S-matrix pole.

NODE=M174M;LINKAGE=SM

4 S-matrix pole. GUO 06 in a chiral unitary approach report a mass of 757 ± 33 MeV and a width of 558 ± 82 MeV.

NODE=M174M;LINKAGE=AB

5 A fit in the $K_0^*(800) + K^*(892) + K^*(1410)$ model with mass and width of the $K_0^*(800)$ from ABLIKIM 06C well describes the left slope of the $K_S^0 \pi^-$ invariant mass spectrum in $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ decay studied by EPIFANOV 07.

NODE=M174M;LINKAGE=EP

6 S-matrix pole. Using Roy-Steiner equations (ROY 71) as well as unitarity, analyticity and crossing symmetry constraints.

NODE=M174M;LINKAGE=DE

7 Not seen by KOPP 01 using 7070 events of $D^0 \rightarrow K^- \pi^+ \pi^0$. LINK 02E and LINK 05I show clear evidence for a constant non-resonant scalar amplitude rather than $K_0^*(800)$ in their high statistics analysis of $D^+ \rightarrow K^- \pi^+ \mu^+ \nu_\mu$.

NODE=M174M;LINKAGE=A

8 AUBERT 07T does not find evidence for the charged $K_0^*(800)$ using 11k events of $D^0 \rightarrow K^- K^+ \pi^0$.

NODE=M174M;LINKAGE=AU

9 S-Matrix pole. Supersedes BUGG 06. Combined analysis of ASTON 88, ABLIKIM 06C, AITALA 06, and LINK 09 using an s-dependent width with couplings to $K\pi$ and $K\eta'$, and the Adler zero near thresholds.

NODE=M174M;LINKAGE=BG

10 T-matrix pole.

NODE=M174M;LINKAGE=TM

11 A Breit-Wigner mass and width.

NODE=M174M;LINKAGE=BW

12 S-matrix pole. Reanalysis of ASTON 88, AITALA 02, and ABLIKIM 06C using for the κ an s-dependent width with an Adler zero near threshold.

NODE=M174M;LINKAGE=BU

13 Breit-Wigner parameters. A significant S-wave can be also modeled as a non-resonant contribution.

NODE=M174M;LINKAGE=CA

14 Using ASTON 88.

NODE=M174M;LINKAGE=ZH

15 T-matrix pole. Reanalysis of data from LINGLIN 73, ESTABROOKS 78, and ASTON 88 in the unitarized ChPT model.

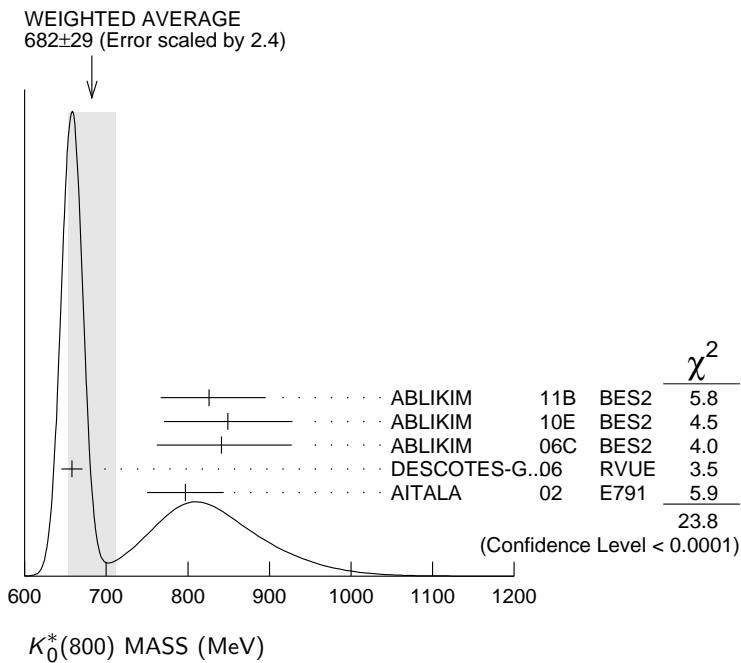
NODE=M174M;LINKAGE=PE

16 T-matrix pole. Reanalysis of ASTON 88 data.

NODE=M174M;LINKAGE=A1

17 Reanalysis of ASTON 88 using interfering Breit-Wigner amplitudes.

NODE=M174M;LINKAGE=IS

 **$K_0^*(800)$ MASS (MeV)** **$K_0^*(800)$ WIDTH**

NODE=M174W

NODE=M174W

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
547 ± 24 OUR AVERAGE				Error includes scale factor of 1.1.

449 ± 156	+144 -81	1338	18 ABLIKIM	11B BES2 $J/\psi \rightarrow K_S^0 K_S^0 \pi^+ \pi^-$
512 ± 80	+ 92 - 44	1421	19,20 ABLIKIM	10E BES2 $J/\psi \rightarrow K^\pm K_S^0 \pi^\mp \pi^0$
618 ± 90	+ 96 -144	25k	19,21 ABLIKIM	06C BES2 $J/\psi \rightarrow \bar{K}^*(892)^0 K^+ \pi^-$
557 ± 24			22 DESCOTES-G..06	RVUE $\pi K \rightarrow \pi K$
410 ± 43	± 87	15k	23,24 AITALA	02 E791 $D^+ \rightarrow K^- \pi^+ \pi^+$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
658 ± 10	± 44	25 BUGG	10 RVUE	S-matrix pole
638.8 ± 4.4	± 40.4	141k	26 BONVICINI	08A CLEO $D^+ \rightarrow K^- \pi^+ \pi^+$
464 ± 28	± 22	54k	27 LINK	07B FOCS $D^+ \rightarrow K^- \pi^+ \pi^+$
684 ± 120		28 BUGG	06 RVUE	
251 ± 48		29 CAWLFIELD	06A CLEO	$D^0 \rightarrow K^+ K^- \pi^0$
606 ± 59		19,30 ZHOU	06 RVUE	$K p \rightarrow K^- \pi^+ n$
470 ± 66		31 PELAEZ	04A RVUE	$K \pi \rightarrow K \pi$
724 ± 332		30 ZHENG	04 RVUE	$K^- p \rightarrow K^- \pi^+ n$
772 ± 100		32 BUGG	03 RVUE	11 $K^- p \rightarrow K^- \pi^+ n$
545 ± 235		33 ISHIDA	97B RVUE	11 $K^- p \rightarrow K^- \pi^+ n$

18 The Breit-Wigner parameters from a fit with seven intermediate resonances. The S-matrix pole position is $(764 \pm 63^{+71}_{-54}) - i(306 \pm 149^{+143}_{-85})$ MeV.

NODE=M174W;LINKAGE=LI

19 S-matrix pole.

NODE=M174W;LINKAGE=AB
NODE=M174W;LINKAGE=BL

20 From a fit including ten additional resonances and energy-independent Breit-Wigner width.

NODE=M174W;LINKAGE=EP

21 A fit in the $K_0^*(800) + K^*(892) + K^*(1410)$ model with mass and width of the $K_0^*(800)$ from ABLIKIM 06C well describes the left slope of the $K_S^0 \pi^-$ invariant mass spectrum in $\tau^- \rightarrow K_S^0 \pi^- \nu_\tau$ decay studied by EPIFANOV 07.

NODE=M174W;LINKAGE=DE

22 S-matrix pole. Using Roy-Steiner equations (ROY 71) as well as unitarity, analyticity and crossing symmetry constraints.

NODE=M174W;LINKAGE=A

23 Not seen by KOPP 01 using 7070 events of $D^0 \rightarrow K^- \pi^+ \pi^0$. LINK 02E and LINK 05I show clear evidence for a constant non-resonant scalar amplitude rather than $K_0^*(800)$ in their high statistics analysis of $D^+ \rightarrow K^- \pi^+ \mu^+ \nu_\mu$.

NODE=M174W;LINKAGE=AU

24 AUBERT 07T does not find evidence for the charged $K_0^*(800)$ using 11k events of $D^0 \rightarrow K^- K^+ \pi^0$.

NODE=M174W;LINKAGE=BG

25 S-Matrix pole. Supersedes BUGG 06. Combined analysis of ASTON 88, ABLIKIM 06C, AITALA 06, and LINK 09 using an s-dependent width with couplings to $K\pi$ and $K\eta'$, and the Adler zero near thresholds.

NODE=M174W;LINKAGE=TM

26 T-matrix pole.

- 27 A Breit-Wigner mass and width.
 28 S-matrix pole. Reanalysis of ASTON 88, AITALA 02, and ABLIKIM 06C using for the κ an s -dependent width with an Adler zero near threshold.
 29 Statistical error only. A fit to the Dalitz plot including the $K_0^*(800)^\pm$, $K^*(892)^\pm$, and ϕ resonances modeled as Breit-Wigners. A significant S -wave can be also modeled as a non-resonant contribution.
 30 Using ASTON 88.
 31 T-matrix pole. Reanalysis of data from LINGLIN 73, ESTABROOKS 78, and ASTON 88 in the unitarized ChPT model.
 32 T-matrix pole. Reanalysis of ASTON 88 data.
 33 Reanalysis of ASTON 88 using interfering Breit-Wigner amplitudes.
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$K_0^*(800)$ REFERENCES

ABLIKIM	11B	PL B698 183	M. Ablikim <i>et al.</i>	(BES II Collab.)	REFID=53683
ABLIKIM	10E	PL B693 88	M. Ablikim <i>et al.</i>	(BES II Collab.)	REFID=53361
BUGG	10	PR D81 014002	D.V. Bugg	(LOQM)	REFID=53213
LINK	09	PL B681 14	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)	REFID=53056
BONVICINI	08A	PR D78 052001	G. Bonvicini <i>et al.</i>	(CLEO Collab.)	REFID=52426
AUBERT	07T	PR D76 011102	B. Aubert <i>et al.</i>	(BABAR Collab.)	REFID=51726
EPIFANOV	07	PL B654 65	D. Epifanov <i>et al.</i>	(BELLE Collab.)	REFID=51929
LINK	07B	PL B653 1	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)	REFID=51875
ABLIKIM	06C	PL B633 681	M. Ablikim <i>et al.</i>	(BES Collab.)	REFID=51037
AITALA	06	PR D73 032004	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)	REFID=51051
Also		PR D74 059901 (errat.)	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)	REFID=51458
BUGG	06	PL B632 471	D.V. Bugg	(LOQM)	REFID=50996
CAWLFIELD	06A	PR D74 031108	C. Cawfield <i>et al.</i>	(CLEO Collab.)	REFID=51153
DESCOTES-G...06		EPJ C48 553	S. Descotes-Genon, B. Moussallam		REFID=51518
GUO	06	NP A773 78	F.K. Guo <i>et al.</i>		REFID=51164
ZHOU	06	NP A775 212	Z.Y. Zhou, H.Q. Zheng		REFID=51198
LINK	05I	PL B621 72	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)	REFID=50679
PELAEZ	04A	MPL A19 2879	J.R. Pelaez		REFID=50347
ZHENG	04	NP A733 235	H.Q. Zheng <i>et al.</i>		REFID=50165
BUGG	03	PL B572 1	D.V. Bugg		REFID=49586
AITALA	02	PRL 89 121801	E.M. Aitala <i>et al.</i>	(FNAL E791 Collab.)	REFID=48807
LINK	02E	PL B535 43	J.M. Link <i>et al.</i>	(FNAL FOCUS Collab.)	REFID=48728
KOPP	01	PR D63 092001	S. Kopp <i>et al.</i>	(CLEO Collab.)	REFID=48134
ISHIDA	97B	PTP 98 621	S. Ishida <i>et al.</i>		REFID=48655
ASTON	88	NP B296 493	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)	REFID=40262
ESTABROOKS	78	NP B133 490	P.G. Estabrooks <i>et al.</i>	(MCGI, CARL, DURH+)	REFID=22443
LINGLIN	73	NP B55 408	D. Linglin		REFID=22428
ROY	71	PL 36B 353	S.M. Roy	(CERN)	REFID=51107
